

SEQUENCE LISTING



<110> Bujard, Hermann

<120> Method for producing recombinants
intended for use in a complete Malaria antigen GP190/MSP1

<130> GRUE-003

<140> 09/269,874

<141> 1999-08-02

<150> PCT/EP97/05441

<151> 1997-10-02

<150> DE 19640817.2

<151> 1996-10-02

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<170> FastSEQ for Windows Version 4.0

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Leu	Asn	Asp	Ile	Thr	Lys	Glu	Tyr	Glu	Lys	Leu	Leu	Asn	Glu	Ile	Tyr	
				485					490					495		
Asp	Ser	Lys	Phe	Asn	Asn	Asn	Ile	Asp	Leu	Thr	Asn	Phe	Glu	Lys	Met	
			500					505					510			
Met	Gly	Lys	Arg	Tyr	Ser	Tyr	Lys	Val	Glu	Lys	Leu	Thr	His	His	Asn	
	515						520					525				
Thr	Phe	Ala	Ser	Tyr	Glu	Asn	Ser	Lys	His	Asn	Leu	Glu	Lys	Leu	Thr	
	530					535						540				
Lys	Ala	Leu	Lys	Tyr	Met	Glu	Asp	Tyr	Ser	Leu	Arg	Asn	Ile	Val	Val	
545					550					555					560	
Glu	Lys	Glu	Leu	Lys	Tyr	Tyr	Lys	Asn	Leu	Ile	Ser	Lys	Ile	Glu	Asn	
			565					570						575		
Glu	Ile	Glu	Thr	Leu	Val	Glu	Asn	Ile	Lys	Lys	Asp	Glu	Glu	Gln	Leu	
			580					585					590			
Phe	Glu	Lys	Lys	Ile	Thr	Lys	Asp	Glu	Asn	Lys	Pro	Asp	Glu	Lys	Ile	
	595						600					605				
Leu	Glu	Val	Ser	Asp	Ile	Val	Lys	Val	Gln	Val	Gln	Lys	Val	Leu	Leu	
	610					615					620					

Met	Asn	Lys	Ile	Asp	Glu	Leu	Lys	Lys	Thr	Gln	Leu	Ile	Leu	Lys	Asn	625	630	635	640
Val	Glu	Leu	Lys	His	Asn	Ile	His	Val	Pro	Asn	Ser	Tyr	Lys	Gln	Glu	645	650	655	
Asn	Lys	Gln	Glu	Pro	Tyr	Tyr	Leu	Ile	Val	Leu	Lys	Lys	Glu	Ile	Asp	660	665	670	
Lys	Leu	Lys	Val	Phe	Met	Pro	Lys	Val	Glu	Ser	Leu	Ile	Asn	Glu	Glu	675	680	685	
Lys	Lys	Asn	Ile	Lys	Thr	Glu	Gly	Gln	Ser	Asp	Asn	Ser	Glu	Pro	Ser	690	695	700	
Thr	Glu	Gly	Glu	Ile	Thr	Gly	Gln	Ala	Thr	Thr	Lys	Pro	Gly	Gln	Gln	705	710	715	720
Ala	Gly	Ser	Ala	Leu	Glu	Gly	Asp	Ser	Val	Gln	Ala	Gln	Ala	Gln	Glu	725	730	735	
Gln	Lys	Gln	Ala	Gln	Pro	Pro	Val	Pro	Val	Pro	Val	Pro	Glu	Ala	Lys	740	745	750	
Ala	Gln	Val	Pro	Thr	Pro	Pro	Ala	Pro	Val	Asn	Asn	Lys	Thr	Glu	Asn	755	760	765	
Val	Ser	Lys	Leu	Asp	Tyr	Leu	Glu	Lys	Leu	Tyr	Glu	Phe	Leu	Asn	Thr	770	775	780	
Ser	Tyr	Ile	Cys	His	Lys	Tyr	Ile	Leu	Val	Ser	His	Ser	Thr	Met	Asn	785	790	795	800
Glu	Lys	Ile	Leu	Lys	Gln	Tyr	Lys	Ile	Thr	Lys	Glu	Glu	Glu	Ser	Lys	805	810	815	
Leu	Ser	Ser	Cys	Asp	Pro	Leu	Asp	Leu	Leu	Phe	Asn	Ile	Gln	Asn	Asn	820	825	830	
Ile	Pro	Val	Met	Tyr	Ser	Met	Phe	Asp	Ser	Leu	Asn	Asn	Ser	Leu	Ser	835	840	845	
Gln	Leu	Phe	Met	Glu	Ile	Tyr	Glu	Lys	Glu	Met	Val	Cys	Asn	Leu	Tyr	850	855	860	
Lys	Leu	Lys	Asp	Asn	Asp	Lys	Ile	Lys	Asn	Leu	Leu	Glu	Glu	Ala	Lys	865	870	875	880
Lys	Val	Ser	Thr	Ser	Val	Lys	Thr	Leu	Ser	Ser	Ser	Ser	Met	Gln	Pro	885	890	895	
Leu	Ser	Leu	Thr	Pro	Gln	Asp	Lys	Pro	Glu	Val	Ser	Ala	Asn	Asp	Asp	900	905	910	
Thr	Ser	His	Ser	Thr	Asn	Leu	Asn	Asn	Ser	Leu	Lys	Leu	Phe	Glu	Asn	915	920	925	
Ile	Leu	Ser	Leu	Gly	Lys	Asn	Lys	Asn	Ile	Tyr	Gln	Glu	Leu	Ile	Gly	930	935	940	
Gln	Lys	Ser	Ser	Glu	Asn	Phe	Tyr	Glu	Lys	Ile	Leu	Lys	Asp	Ser	Asp	945	950	955	960
Thr	Phe	Tyr	Asn	Glu	Ser	Phe	Thr	Asn	Phe	Val	Lys	Ser	Lys	Ala	Asp	965	970	975	
Asp	Ile	Asn	Ser	Leu	Asn	Asp	Glu	Ser	Lys	Arg	Lys	Lys	Leu	Glu	Glu	980	985	990	
Asp	Ile	Asn	Lys	Leu	Lys	Lys	Thr	Leu	Gln	Leu	Ser	Phe	Asp	Leu	Tyr	995	1000	1005	
Asn	Lys	Tyr	Lys	Leu	Lys	Leu	Glu	Arg	Leu	Phe	Asp	Lys	Lys	Lys	Thr	1010	1015	1020	
Val	Gly	Lys	Tyr	Lys	Met	Gln	Ile	Lys	Lys	Leu	Thr	Leu	Leu	Lys	Glu	1025	1030	1035	1040
Gln	Leu	Glu	Ser	Lys	Leu	Asn	Ser	Leu	Asn	Asn	Pro	Lys	His	Val	Leu	1045	1050	1055	
Gln	Asn	Phe	Ser	Val	Phe	Phe	Asn	Lys	Lys	Glu	Ala	Glu	Ile	Ala		1060	1065	1070	
Glu	Thr	Glu	Asn	Thr	Leu	Glu	Asn	Thr	Lys	Ile	Leu	Leu	Lys	His	Tyr	1075	1080	1085	

Lys Gly Leu Val	Lys Tyr Tyr Asn Gly Glu Ser Ser Pro Leu Lys Thr
1090	1095 1100
Leu Ser Glu Glu Ser	Ile Gln Thr Glu Asp Asn Tyr Ala Ser Leu Glu
1105	1110 1115 1120
Asn Phe Lys Val	Leu Ser Lys Leu Glu Gly Lys Leu Lys Asp Asn Leu
	1125 1130 1135
Asn Leu Glu Lys Lys Lys Leu Ser	Tyr Leu Ser Ser Gly Leu His His
	1140 1145 1150
Leu Ile Ala Glu Leu Lys Glu Val	Ile Lys Asn Lys Asn Tyr Thr Gly
	1155 1160 1165
Asn Ser Pro Ser Glu Asn Asn Thr Asp Val	Asn Asn Ala Leu Glu Ser
	1170 1175 1180
Tyr Lys Lys Phe Leu Pro Glu Gly Thr Asp Val Ala Thr Val Val Ser	
1185	1190 1195 1200
Glu Ser Gly Ser Asp Thr Leu Glu Gln Ser Gln Pro Lys Lys Pro Ala	
	1205 1210 1215
Ser Thr His Val Gly Ala Glu Ser Asn Thr Ile Thr Thr Ser Gln Asn	
	1220 1225 1230
Val Asp Asp Glu Val Asp Asp Val Ile Ile Val Pro Ile Phe Gly Glu	
	1235 1240 1245
Ser Glu Glu Asp Tyr Asp Asp Leu Gly Gln Val Val Thr Gly Glu Ala	
	1250 1255 1260
Val Thr Pro Ser Val Ile Asp Asn Ile Leu Ser Lys Ile Glu Asn Glu	
1265	1270 1275 1280
Tyr Glu Val Leu Tyr Leu Lys Pro Leu Ala Gly Val Tyr Arg Ser Leu	
	1285 1290 1295
Lys Lys Gln Leu Glu Asn Asn Val Met Thr Phe Asn Val Asn Val Lys	
	1300 1305 1310
Asp Ile Leu Asn Ser Arg Phe Asn Lys Arg Glu Asn Phe Lys Asn Val	
	1315 1320 1325
Leu Glu Ser Asp Leu Ile Pro Tyr Lys Asp Leu Thr Ser Ser Asn Tyr	
	1330 1335 1340
Val Val Lys Asp Pro Tyr Lys Phe Leu Asn Lys Glu Lys Arg Asp Lys	
1345	1350 1355 1360
Phe Leu Ser Ser Tyr Asn Tyr Ile Lys Asp Ser Ile Asp Thr Asp Ile	
	1365 1370 1375
Asn Phe Ala Asn Asp Val Leu Gly Tyr Tyr Lys Ile Leu Ser Glu Lys	
	1380 1385 1390
Tyr Lys Ser Asp Leu Asp Ser Ile Lys Lys Tyr Ile Asn Asp Lys Gln	
	1395 1400 1405
Gly Glu Asn Glu Lys Tyr Leu Pro Phe Leu Asn Asn Ile Glu Thr Leu	
	1410 1415 1420
Tyr Lys Thr Val Asn Asp Lys Ile Asp Leu Phe Val Ile His Leu Glu	
1425	1430 1435 1440
Ala Lys Val Leu Asn Tyr Thr Tyr Glu Lys Ser Asn Val Glu Val Lys	
	1445 1450 1455
Ile Lys Glu Leu Asn Tyr Leu Lys Thr Ile Gln Asp Lys Leu Ala Asp	
	1460 1465 1470
Phe Lys Lys Asn Asn Asn Phe Val Gly Ile Ala Asp Leu Ser Thr Asp	
	1475 1480 1485
Tyr Asn His Asn Asn Leu Leu Thr Lys Phe Leu Ser Thr Gly Met Val	
	1490 1495 1500
Phe Glu Asn Leu Ala Lys Thr Val Leu Ser Asn Leu Leu Asp Gly Asn	
1505	1510 1515 1520
Leu Gln Gly Met Leu Asn Ile Ser Gln His Gln Cys Val Lys Lys Gln	
	1525 1530 1535
Cys Pro Gln Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu	
	1540 1545 1550

Cys	Lys	Cys	Leu	Leu	Asn	Tyr	Lys	Gln	Glu	Gly	Asp	Lys	Cys	Val	Glu
		1555					1560					1565			
Asn	Pro	Asn	Pro	Thr	Cys	Asn	Glu	Asn	Asn	Gly	Gly	Cys	Asp	Ala	Asp
	1570					1575					1580				
Ala	Lys	Cys	Thr	Glu	Glu	Asp	Ser	Gly	Ser	Asn	Gly	Lys	Lys	Ile	Thr
1585				1590					1595					1600	
Cys	Glu	Cys	Thr	Lys	Pro	Asp	Ser	Tyr	Pro	Leu	Phe	Asp	Gly	Ile	Phe
			1605					1610				1615			
Cys	Ser	Ser	Ser	Asn	Phe	Leu	Gly	Ile	Ser	Phe	Leu	Leu	Ile	Leu	Met
		1620					1625					1630			
Leu	Ile	Leu	Tyr	Ser	Phe	Ile									
		1635													